

WE CLAIM:

1. A method for an operator to monitor access network services available to an end device, where the end device communicates in a heterogeneous network environment, the method comprising:

5 a) instructing the end device to determine available access networks located with the heterogeneous network environment;

b) collecting access network information from at least one node within the heterogeneous network; and

c) making the access network information available to the operator.

10 2. The method of claim 1, further including:

d) providing the access network to the end device in accordance with the collected information.

3. The method of claim 1, wherein b) comprises generating a probe.

4. The method of claim 3 wherein the probe comprises a tracer packet.

15 5. The method of claim 4 wherein the tracer packet includes a format substantially similar to an application data Internet protocol (IP) packet with the addition of heterogeneous access network tracking (HANT) data.

6. The method of claim 3 wherein the probe is initiated automatically.

7. The method of claim 6 wherein the probe occurs periodically.

20 8. The method of claim 3 wherein the probe is initiated upon the occurrence of an event.

9. The method of claim 8 wherein the event comprises a bandwidth of the end device being below a determined level.

10. The method of claim 3 wherein the probe is initiated by a user of the end device.

11. The method of claim 3, wherein b) comprises:
extracting the probe from the datastream;
storing access network information in the probe; and
returning the probe to the datastream.

12. The method of claim 1, wherein a Hyper Operator provides the access network to the end device.

13. The method of claim 12 wherein the Hyper Operator determines available access networks from the collected information.

14. The method of claim 1 further including a probing server, wherein the probing server sends instructions to the end device to control probing.

15. A network system for an operator to monitor access network services available to an end device, where the end device communicates in a heterogeneous network environment, the system comprising:

a probing server to instruct the end device to determine available access networks located with the heterogeneous network environment;

a probe sent by the end device upon instruction from the probing server, wherein the probe collects access network information from at least one node within the heterogeneous network; and

a database to store the access network information.

16. The system of claim 15 wherein the access network is provided to the end device in accordance with the collected information.

17. The system of claim 15 wherein the probe comprises a tracer packet.

18. The system of claim 17 wherein the tracer packet includes a format substantially similar to an application data Internet protocol (IP) packet with the addition of heterogeneous access network tracking (HANT) data.

19. The system of claim 15 wherein the probe is initiated automatically.

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20. The system of claim 19 wherein the probe occurs periodically.

21. The system of claim 15 wherein the probe is initiated upon the occurrence of an event.

22. The system of claim 21 wherein the event comprises a bandwidth of the end device being below a determined level.

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23. The system of claim 15 wherein the probe is initiated by a user of the end device.

24. The system of claim 15 wherein the probe is extracted from the datastream, access network information is stored in the probe, and then the probe is returned to the datastream.

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25. The system of claim 15 further including a Hyper Operator to provide the access network to the end device.

26. The system of claim 25 wherein the Hyper Operator determines available access networks from the collected information.

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27. The system of claim 15 wherein the probing server sends instructions to the end device to control probing.